DOCUMENT RESUME

ED 321 226 CS 009 700

AUTHOR Rabin, Annette T.
TITLE Determining the Difficulty of Reading Materials in Languages Other than English.
PUB DATE 31 Jul 87
NOTE 17p.; Paper presented at the European Conference on Reading (5th, Salamanca, Spain, July 27-31, 1987).
PUB TYPE Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cloze Procedure; Evaluation Problems; *Language Research; *Readability; *Readability Formulas; *Second Language Learning; Second Languages
IDENTIFIERS Text Factors

ABSTRACT

The development of readability formulas for the evaluation of foreign language texts began with research in the United States on reading materials used in second language learning and has extended to many other countries first by adaptation of formulas intended for English language texts and then by original investigation. There exist now many instruments to measure the readability of languages other than English, but controversy exists over the variables to be included in the formulas. In some cases, cloze procedures have been developed to overcome the lack of a feasible readability formula. (Sixty-seven references are attached.) (RS)

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DETERMINING THE DIFFICULTY OF READING MATERIALS IN LANGUAGES OTHER THAN ENGLISH*

Paper presented at the Fifth European Conference on Reading in Salamanca, Spain on July 31, 1987

Instruments for the evaluation of foreign language text were first developed in the United States for the benefit of English - speaking students studying second languages. Early research abroad involved the modification of American instruments then, eventually, original techniques. Today, there are available for use by foreign language teachers instruments for the evaluation of many of the second languages taught in the United States as well as for tongues taught elsewhere in the world. There is, however, some controversy regarding their appropriateness.

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Annette T. Rabin, Ed. D.
Assistant Professor of Education
Lincoln University
Lincoln University, PA 19352
or
1100 East Lincoln Highway
Coatesville, PA 19320, U.S.A.

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*For additional information on this topic see:

Rabin, Annette T. "Determining Difficulty Levels of Text Written in Languages Other Than English," in Zakaluk, B. and S. J. Samuels, Eds., Readability, Its Past, Present, and Future. Newark, Delaware: International Reading Association, 1988.

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Determining the Difficulty of Reading Materials in Languages Other Than English

Much of the early research on the use of readability measures for languages other than English was conducted in the United States for the benefit of English-speaking students studying additional languages. This process, according to Klare (1974-75), probably began with the proposal by Tharp in 1939 of an Index of Difficulty for the French language. This instrument took into account only the density and frequency aspects of the vocabulary in determining the difficulty of a piece of prose.

Languages for Which Instruments are Available

Readability research on foreign language text has continued until the present day. As a result, there have been developed in the United States at least seven formulas or their variations for Spanish text (Crawford, 1984; Garcia,1977; Gilliam, Peña, and Mountain, 1980; Patterson, 1972; Spaulding, 1951, 1956; Thonis, 1976; Vari-Cartier, 1981) as well as instruments for Russian (Rock, 1969), German (Schwartz, 1975; Walters, 1966), Hebrew (Nahshon, 1957), Korean (Park, 1974), Vietnamese (Nguyen and Henkin, 1982), Chinese (Yang, 1970), and Hindi (Bhagoliwal, 1961).

The earliest readability measures developed on the European continent were all based on modifications of the Flesch Reading Ease Formula (1950). From this formula instruments were developed for French (De Landsheere, 1963, 1970; Kandel and Moles, 1958), German (De Landsheere, 1970), Dutch (Douma, 1960; Brouwer, 1963), and Spanish (Fernández Huerta, 1959).

By the late 1950's and early 1960's, foreign researchers began developing original instruments. Three more formulas were devised for Dutch (Van Hauwermeiren, 1972; Zondervan and van Steen, 1976; Staphorsius, 1985); two sets, one practical and one experimental, for French (Henry, 1975; Richaudeau, 1973); five for German (Fucks, 1955; Briest, 1974; Nestler, 1977; Dickes and Steiwer, 1977; Bamberger and Vanecek, 1982, 1984), some of which are also in multiple forms; at least three for Spanish, one in Venezuela (Gutiérrez et al., 1972) and two in Spain (López Rodríguez, 1981, 1982; Rodríguez Diéguez, 1983): and one, originally for Swedish (Björnsson, 1968, 1983), which was later adapted to eleven languages.

Controversy Regarding Use of Readability Instruments for Non-Native Speakers

There is some controversy regarding the use of the same criteria and variables for the evaluation of foreign language texts used in the classroon as for those in one's own tongue. Of the more than 250 variables which have been studied for use in measuring readability, two have been revealed as the most effective. Word length, alone or in combination with word frequency based on some word list, together with sentence length have been judged as accounting for most of the variance in the measurement of reading materials. Often, cloze tests are administered to what is considered a criterion population and then used as a basis for a readability formula.

Jacques M. Laroche authored an article in the August 1979

issue of System entitled "Readability Measurement for Foreign-Language Material." In discussing the development of a readability instrument from cloze results, he observed that he saw no criterion population available in the case of foreign language reading materials. Likewise, he considered the use of word frequency lists a fallacy, as he felt that the use of a word was related to the "language bath" in which one was immersed. The linguistic ambiance of the native speaker, he reasoned, would differ from that of the foreign learner. At least one sociolinguist, Ervin-Tripp (1973), has been of a similar opinion, pointing out that the age at which a second language is learned affects the body of meaning acquired. While a child's thinking and vocabulary might be oriented toward personal needs, an adult's speech would reflect a more complex development of knowledge and skills. This would influence vocabulary usage. Laroche recommended some instrument which would take into account cognate count and frequency, sentence length as a reflection of syntactic complexity, and phrase structure complexity.

Schulz (1981), writing in the Spring 1981 issue of the Modern Language Journal, disagreed, however, claiming that psycholinguists assume that once sound-symbol correspondences have been established and students are familiar with a body of vocabulary and morphology, reading in a second language is identical to reading in one's own tongue. Unfortunately, she offered no research to support her stance. As a matter of fact, a study (Clark, 1980) which she described seemed to refute her argument.

The research involved two groups of Spanish-speaking

students who had been divided into good and poor readers in their native language. Results of an ESL (English as a Second Language) test given to the two groups showed much less variation in their scores than on the Spanish reading test given previously, demonstrating the leveling effect of the belated acquisition of a foreign language.

It may well be that we need to view any of the measures recommended for use with foreign language text from the point of view taken by Spaulding (1951, 1956), who published the first readability formulas for use with Spanish language text in 1951. Spaulding, following the Dale-Chall model, developed a formula using the two variables of word usage, or frequency, based on the Buchanan list (Doyle, 1941) of the 1500 most frequently used words in Spanish, and average sentence length. This formula was widely used in both the United States and Latin America. Scores yielded were on a scale of from below 40 for first primers to 121 and above for exceptionally difficult text. For foreign language students, he saw his instrument as a relative measure and suggested that teachers evaluate classroom materials currently in use and then progress from level to level in a logical manner.

Formulas Available for Foreign Language Teachers

Readability instruments available for use by teachers of Spanish are the most numerous and the easiest to use, though scores yielded do not all represent the same thing. Spaulding's formula is the most cumbersome, since it requires the use of a word frequency list. Crawford (1984) developed a Fry-type (Fry, 1968, 1977) formula for evaluating Spanish text on the

elementary level using as criteria ten different basal reader series used in the United States, Latin America, and Spain. Two other Fry-type procedures were developed. Gilliam, Peña, and Mountain conducted research studies which convinced them that one had only to compute average sentence length and syllables in the usual way and then simply subtract the number 67 from the syllable count before plotting the score on the regular Fry Graph. Perhaps the most practical readability instrument for use by American secondary school teachers is the FRASE (Fry Readability Adaptation for Spanish Evaluation) devised by Vari-Cartier (1981). The criteria for this procedure were 127 American textbooks for Spanish language instruction. The Fry-type graph, with an increased syllable count and an altered sentence count, is divided to reflect the four general levels of second-language study in the United States: beginning, intermediate, advanced intermediate, and advanced.

Gutiérrez et al. (1972) in Venezuela were responsible for what appears to be the first original Spanish language readability formula developed outside of the United States. A multiple regression equation with cloze as a criterion, it was validated only at the sixth grade level.

In Spain, López Rodríguez (1981, 1982) studied twenty-six linguistic variables, selecting seven of them for her first readability formula. Among the factors used was a list of common vocabulary by García Hoz (1953). Her criterion was derived from cloze tests, each administered to ten students. Rodríguez Diéguez (1983, 1987) added eight variables to his predecessor's list, using

twelve of the thirty-four in his instrument. His criterion was developed from 123 cloze tests, each also administered to ten subjects. Currently, he is working on a formula that will extend to the end of college in two-year intervals. Another development that may be needed is either a procedure for simplifying the calculations or a graph reflecting the data, so that the classroom teacher might be able to calculate the difficulty of a piece of prose more easily.

Of the two most usable instruments for evaluating German language text, one was developed experimentally in the United States and the other in Austria. The American effort was by Schwartz (1975) and is, again, a modification of the Fry Graph, this time with grade levels to 8+. The criteria were German-language readers for grades one through eight used in post-World War II West Germany.

The other German language research was conducted in Austria by Bamberger and Vanecek (1982, 1984; Bamberger and Rabin, 1984). Several of Bamberger's instruments are feasible for use with German-language textual materials in an American school, if one keeps in mind Spaulding's theory of relativity. Though some of the earlier formulas require the use of a word frequency list based on the vocabulary of a ten-year-old German-speaking child, there is at least one which can be used by itself.

Grade Level = 0.2656sl + 0.2744ms - 1.6939
sl = sentence length
ms = multisyllabic words

Bamberger eventually developed procedures for measuring German text by both subjective and objective means and cross-checking the results. Subjective evaluation is based on a

checklist for grading the nonlanguage factors in a piece of prose, including content, legibility, arrangement and organization, style, reader factors, and pedagogical or instructional features. Objective, or language, variables have been compiled into two profiles, one for fiction and one for nonfiction, by which various language factors in a piece of prose can be evaluated individually or by additive means to yield a grade level.

One of the additive formulas which can be derived from Bamberger's language profiles is Lix, short for läsbarhetsindex, or readability index, in Swedish. Based on the research of Björnsson in Sweden (1968), Lix scores were originally calculated on a scale of from 20 for very easy text to 60 for very difficult. Interpretation norms for Swedish, Danish, and English are fairly similar. They are higher for German and French, due to greater word length. Grade levels have been assigned for German fiction and nonfiction by Bamberger (Bamberger and Rabin, 1984, pp. 515 and 517; Bamberger and Vanecek, 1984, p. 64) and for English by Anderson (1983, p.494) in Australia. Björnsson has used Lix for research in eleven languages (Björnsson, 1983). Though one might not have an interpretation for a particular language, the formula can easily be used as a relative measure. It is:

Lix = average number of words per sentence + percentage of long words.

Long words are those with more than six letters.

Denmark has made its modification of Lix the linguistic

component of a three part program for monitoring the reading difficulty of all Danish teaching materials (Jakobsen, 1971, 1976, 1983; Jansen, 1987). The other two components are the visual, including typography, layout, and print; and the "contents of the text," defined as the personal interest to the reader of the contents of the text.

Other than Lix, I have found no short cut to the evaluation of text in French, another language usually taught in American schools. Henry (1975) in France has developed a technique based on cloze as a criterion. However, the one of his three formulas most suited to the classroom requires the use of a word frequency list and a good knowledge of mathematics. There are, however, graphs which can be used instead. These come in a series with the one to be used dependent on the grade level of the student and not of the reading material. Any piece of prose can be evaluated at three grade levels: 5-6, 8-9, and 11-12. The score yielded is in terms of a percentage on a cloze test, with 35 -45% considered the comfort zone.

The Use of Cloze

In situations where there have been no formulas or other instruments available for evaluating text in a particular language, cloze procedure has often been used, though there is some controversy regarding the use of cloze for this purpose. Cloze is thought to yield a subjective or direct evaluation which reflects the language ability and background of information of the person taking the test (Taylor, 1953). There are some researchers who feel that multiple cloze passages

should be developed from each piece of prose for results to be valid. For example, a test deleting every fifth word should be prepared in five versions, omitting a different word each time. In studies using cloze on Spanish text in Venezuela (Bastidas, Calderón, and Bravo, 1981), researchers found that when cloze tests contained at least 50 items, there was a high correlation between parellel forms from the same material. Another researcher in Iran (Derakshani, 1980), however, found that there was not always the same mean score for different versions of a particular passage. These findings are similar to those of Entin in the United States (Entin, 1980; Entin and Klare, 1985). Working with cloze tests based on two of the five possible versions, she found that in sixteen of twenty-four comparisons there were significant differences at the .05 level.

Even if one is dubious about the value of cloze to measure the difficulty of foreign language text, it can be an asset in determining the individual student's ability to comprehend material in the second language and in ascertaining what percentage of a class is able to comprehend a particular text (Morles, 1981). It has been suggested that every seventh word be deleted when one is evaluating student competence in a second language to lessen frustration (Hanzeli, 1977).

Conclusion

The development of readability instruments for the evaluation of foreign language text has been a continuous process. It began with research in the United States on reading materials used in second language learning and has

extended to most of the civilized world, first by the adaptation of formulas intended for English language text and then by original investigation.

Although research in the United States has tended to limit the selection of variables contributing to text difficulty to semantic (word length) and syntactic (sentence length) factors, there have been researchers elsewhere who have seen fit to increase these. A notable exception is Björnsson of Sweden, whose investigations produced the additive formula Lix. In situations where formulas have not been feasible, cloze procedure has been adapted to local needs.

There are those who feel that the variables used in the development of readability measures for second language text should differ from those variables used for one's native tongue. Some investigators in the United States and abroad also believe that such factors as physical, psycholinguistic,and contextual cues should be considered when evaluating the difficulty of written text.

When reading specialists are assisting classroom teachers in the selection and use of appropriate reading materials, they are not always equipped to go beyond the usual consideration of such factors as format, typography, and illustrations for foreign language teachers. As is evident from the preceding, there are available a number of procedures for evaluating the prose portions of texts in many languages, most of them based on sound judgement and research.

It is to be hoped that current investigations will continue, given the importance of reading materials in both the education

and the daily activities of all of us.

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